

-continued

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 145 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

```

TTGGCCACTC CCTCTCTGCG CGCTCGCTCG CTCACTGAGG CCGGGCGACC AAAGGTCGCC      60
CGACGCCCGG GCTTTGCCCG GCGGGCCTCA GTGAGCGAGC GAGCGCGCAG AGAGGGAGTG      120
GCCAACTCCA TCACTAGGGG TTCCT                                           145
  
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(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 225 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

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TTTTAGCGGG CTTTTTCCC GCCTTATGCA AATGGGCAGC CATTTTAAGT GTTTACTAT      60
AATTTTATG  GTTAGTTTG TAACGGTTAA AATGGGCGGA GCGTAGGCGG GGA CTACAGT      120
ATATATAGCA CGGTACTGCC GCAGCTCTTT CTTTCTGGGC TGCTTTTCC TGGACTTTCT      180
TGCTGTTTTT TGTGAGCTAA CTAACAGGTA TTTATACTAC TTGTT                      225
  
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What is claimed:

1. An expression vector for site-specific integration and cell-specific gene expression comprising two inverted terminal repeats of adeno-associated virus 2 and at least one cassette comprising a promoter capable of effecting cell-specific expression wherein said promoter is operably linked to a heterologous gene, and wherein said cassette resides between said inverted terminal repeats.

2. The vector of claim 1 wherein each of said inverted terminal repeats comprises the nucleotides of SEQ ID NO:1.

3. The vector of claim 1 wherein each of said inverted terminal repeats comprises nucleotides 1 to 125 of SEQ ID NO:1.

4. The vector of claim 1 wherein said heterologous gene encodes a biologically functional protein.

5. The vector of claim 1 wherein said heterologous gene encodes a non-biologically functional protein.

6. The vector of claim 1 wherein said heterologous gene encodes an antisense RNA.

7. The vector of claim 1 wherein said heterologous gene is selected from the group consisting of a gene encoding α -globin, β -globin, γ -globin, granulocyte macrophage-colony stimulating factor (GM-CSF), tumor necrosis factor

35 (TNF), any one of interleukins 1-11, neomycin resistance, luciferase, adenine phosphoribosyl transferase (APRT), retinoblastoma, insulin, mast cell growth factor, p53, adenosine deaminase.

40 8. The vector of claim 1 wherein said heterologous gene encodes P-glycoprotein.

9. The vector of claim 6 wherein said antisense RNA is complementary to a segment of the DNA or RNA encoding α -globin.

45 10. The vector of claim 1 wherein said vector is AAV-B19-mdr.

11. A host cell transfected by the vector of any one of claims 1-10.

50 12. The host cell of claim 11 wherein said cell is a hematopoietic stem or hematopoietic progenitor cell.

13. A virion comprising the vector of any one of claims 1-9.

14. A host cell infected by the virion of claim 13.

55 15. The host cell of claim 14 wherein said cell is a hematopoietic stem or progenitor cell.

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